

CLAIMS:

1 1. Apparatus for dry ice blast cleaning that is capabl f
2 both metering and blasting preformed dry ice pellets, and also
3 capable of producing and blasting smaller dry ice granules, with
4 said apparatus comprising:

5 a base;

6 a carrier movably supported relative to the base;

7 a driver for powering the carrier in either of two
8 substantially different directions;

9 a means for controlling the movement direction of th
10 carrier;

11 a means for controlling the movement rate of the
12 carrier;

13 a first set of passages located on the carrier with a
14 geometry that meters pellets when the carrier is moved in a first
15 direction;

16 a second set of passages located on the carrier that
17 incorporate a working edge that defines a cutting surface during
18 the movement of the carrier in a second and substantially
19 different direction;

20 a feeder for receiving and delivering a supply of dry
21 ice and advancing same in a feed path in contact with the carri r
22 passages as they move across the feed path;

23 a duct having an outlet, th dry ic particl s b ing

24 directed from the carrier passages to flow from the outlet, there
25 being substantially no storage of particles in the duct; and
26 an accelerator for accelerating the dry ice particles,
27 the accelerator being connected to the outlet.

1 2. Apparatus according to claim 1 wherein the carrier is a
2 wheel rotatably supported on a carrier axis.

1 3. In a system for providing a blasting stream of air and
2 dry ice particles entrained in said air, a particle generator
3 adapted selectively to produce shaved granules of dry ice from
4 block dry ice, or pellets from a supply of pelletized dry ice,
5 without modification of said generator, said generator
6 comprising:

7 a receptacle to receive dry ice in pellet or block
8 form, said receptacle having an end wall with an opening, and a
9 chute receiving product from said opening;

10 a production wheel having an axis of rotation, an
11 upstream face and a downstream face, said production wheel being
12 mounted in said receptacle for selective rotation in either a
13 first or a second direction, said downstream face facing said
14 opening in said receptacle wall, and said upstream face facing
15 into said receptacle for bearing contact by dry ice pellets or by
16 dry ice block, said production wheel including a pellet metering

17 slot extending between said upstream and downstream faces, a
18 metering edge facing in said second direction and an entry edge
19 facing in said first direction, said metering edge lying in the
20 plane of said upstream face, and said entry edge being recessed
21 into said upstream face by a ramp; and

22 a shaving slot extending between said upstream face and
23 said downstream face, a cutting edge facing in said second
24 direction, raised above the plane of said upstream face, and an
25 edge spaced from said cutting edge to admit shavings to said
26 slot, whereby in one direction of rotation with pellets bearing
27 against said upstream face, said metering edge drives particles
28 into its respective slot, and in the other direction of rotation,
29 said cutting edge shaves dry ice particles from a block of dry
30 ice into its respective slot, no edge adversely affecting dry ice
31 in said receptacle when the production wheel is rotated to
32 produce particles generated by the other edge.

1 4. Apparatus according to claim 3 in which said cutting
2 edge of said shaving slot is adjustably positionable above the
3 plane of said upstream face, whereby, when pellets instead of
4 block dry ice are encountered in said second direction, a mixture
5 of particles of various ratios of more and less massive particles
6 are generated, the ratio between them being determined by the
7 position of said cutting edge.

1 5. The method of selection by metering pellets of dry ice
2 and shaving of particles from block dry ice, utilizing a movable
3 surface that can be reversed in direction, having a set of pellet
4 metering slots facing in one direction, and a set of shaving
5 slots facing in the opposite direction, said method comprising:

6 with pellets pressed against the movable surface in a
7 direction so the pellet metering slots admit pellets to a user
8 device; and

9 with block ice pressed against the movable surface in
10 the opposite direction so the shaving slots remove dry ice
11 particles from the block and pass them to a user device.

1 6. A method according to claim 5 in which said pellets are
2 pressed against the surface, and the surface is rotated in said
3 opposite direction to generate particles of mixed mass size.

1 7. A method according to claim 5 in which said movable
2 surface is on a rotatable production wheel.